

TAG: Learning Set 1.9

Read

Name _____

Hour _____ Date _____

Combining Forces

Read pp. 74-75.

What are you going to be looking at in this section?



What does a force-arrow diagram help you to see and describe?

What does the length of an arrow in a force-arrow diagram represent?

Read "**Drawing Force Diagrams**" on pp75-77.

What does the "F" in force diagrams always stand for?

What does the subscript in a force diagram describe?

What does the direction of the arrow indicate?

What are the three rules for drawing a force diagram?

1.

2.

3.

Stop and Think:

Apply what you learned to construct force diagrams for the various situations described in your attached Force Diagrams Page.

Read **"Combining Forces and Net Forces"** on p. 78

What is a "Net Force"?

Explain what it means when a force is said to be balanced. Draw a diagram to illustrate this.

Explain what it means when a force is said to be unbalanced. Draw a diagram to illustrate this.

Read **Net Force and Motion** on pp. 78-79.

Balanced Forces

if an object has a net force of zero what does it tell you about the forces acting upon it and the objects motion?

Unbalanced Forces

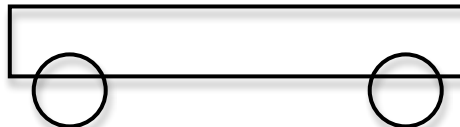
If two unbalanced forces are in opposite directions, the net force is:

If two unbalanced forces are in the same direction, the net force is:

Forces in Different Directions

Draw a diagram of the forces that act on your coaster car in four different directions.

Don't forget to label each force.



Forces at Angles

What happens when the upward and downward forces are no longer balanced due to an angle?

Stop and Think

Draw a force diagram and net force diagram for a skateboarder **accelerating to the right** along a **flat** surface. (Don't forget to include the force of gravity and the force pushing up from the ground)



Draw a force diagram and net force diagram for a skateboarder **moving at a constant speed** to the right along a **flat** surface. (Don't forget to include the force of gravity and the force pushing up from the ground)



Read Draw a Motion Storyboard pp. 83-84.

Use the instructions #1-5 listed on those pages to help you complete your Motion Story Board.

Reflect

Use your Coaster-Car Motion Storyboard page to answer these following questions. Be prepared to share your answers with the class.

1. In what direction is the net force when your coaster car is speeding up? What about when it is slowing down?
2. In which columns or segments of time, do you see the car accelerating?
3. What happens to the coaster car's motion when the forces are balanced (when there is no net force)? What happens to the car's motion when the forces are unbalanced (when there is a net force)?
4. Describe the net forces when the coaster car's motion is changing (speeding up, slowing down, turning).
5. Imagine that the motion storyboard shows the forces on your current coaster car. Now suppose you had to create a motion storyboard for your original coaster car. How would that motion storyboard be different?

Read **"Explain"** on pp. 85-86.

Complete the Create Your Explanation Page with your table group. Remember to use the helpful hints that are given to you in the book.

Communicate

Follow your Teacher's directions how to share your explanation with the class.

Reflect

1. Your current coaster car also travels straighter than your original one did. Sketch two force diagrams: one that shows the forces that pushed your original coaster car to the right or left and one that shows the force that affects the direction of your current coaster car.
2. Use a *Create Your Explanation Page*, make a claim about why your car now travels straighter. Add evidence and science knowledge. Do your best to develop an explanation.

Update the Project Board

Update the Project board columns by adding :

- What you know to: *What are we learning?*
- Evidence to : *What is our evidence?*
- Suggest questions: *What do we need to Investigate?*

What's the Point? Read p. 87.

List the 2 ways that forces can be described.

1.

2.

List 2 things that you have learned about net force from this section.

1.

2.

